CLAIMS

What is claimed is:

1. A method, comprising:
forming source/drain regions on a substrate;
etching the source/drain regions to form faceted regions; and
forming a silicon germanium layer on the faceted regions of the source/drain regions.

2. The method of claim 1, further comprising depositing a photoresist layer above the source/drain regions.

3. The method of claim 1, further comprising depositing a silicon layer above the silicon germanium layer to form a strained device.

4. The method of claim 1, wherein etching further comprises anisotropic wet etching to form the faceted regions.

5. The method of claim 3, wherein anisotropic wet etching allows for controlled faceting of the source/drain regions based on a crystal density and a crystal orientation of the source/drain regions.

6. The method of claim 1, wherein forming the silicon germanium layer further comprises epitaxially growing silicon germanium.

7. The method of claim 4, wherein the faceted regions have an etch-out angle of about 120 degrees to about 130 degrees.

8. A method, comprising:
wet etching a source/drain region of a substrate;
forming a facet region in the source/drain region;

layering the facet region with silicon germanium; and

depositing silicon above silicon germanium.

9. The method of claim 8, wherein wet etching further comprises using an etch solution having about 2 percent to about 30 percent ammonium hydroxide by volume.

10. The method of claim 9, wherein the etch solution has a pH of about 9 to about 11.

11. The method of claim 10, wherein the etch solution has a temperature of about 15 ^{0}C to about 60 ^{0}C.

12. The method of claim 8, wherein wet etching further comprises using an etch solution of about 10 percent to about 30 percent tetra methyl ammonium hydroxide by volume.

13. The method of 12, wherein the etch solution has a temperature of about 20 ^{0}C to about 45 ^{0}C.

14. The method of claim 8, wherein wet etching further comprises etching the source/drain region to an etch depth of about 100 Angstroms to about 500 Angstroms.

15. The method of claim 8, wherein forming further comprises the facet region having an etch-out angle of about 120 degrees to about 130 degrees.

16. The method of claim 8, wherein wet etching further comprises depositing a photoresist above the source/drain region.

17. The method of claim 9, wherein the etch solution is based on a crystal density and a crystal orientation of the substrate.

18. The method of claim 12, wherein the etch solution is based on a crystal density and a crystal orientation of the substrate.

19. The method of claim 12, wherein wet etching further comprises sonicating the wet etch solution.

20. The method of claim 8, wherein layering further comprises epitaxially growing silicon germanium.

21. A method, comprising:

providing a substrate having a source/drain region, a gate electrode disposed above the substrate, and a channel region formed below the gate electrode;

etching the source/drain region to form a faceted region near the channel region;

layering the faceted region with silicon germanium; and

depositing silicon above the silicon germanium.

22. The method of claim 21, wherein etching further comprises wet etching with an etch solution of about 10 percent to about 30 percent tetra methyl ammonium hydroxide by volume.

23. The method of claim 21, wherein etching further comprises wet etching with an etch solution of about 2 percent to about 30 percent ammonium hydroxide by volume.

24. The method of claim 21, wherein etching further comprises etching the source/drain region to an etch depth of about 100 Angstroms to about 500 Angstroms.

25. The method of 24, wherein etching further comprise forming an undercut region between the gate electrode and the channel region.

26. The method of claim 21, wherein layering further comprises epitaxially growing silicon germanium.

27. The method of claim 26, wherein layering further comprises a germanium composition of about 10 percent to about 60 percent.

28. The method of claim 27, wherein layering invokes a strain on the silicon deposited above the silicon germanium.

29. The method of claim 27, wherein layering invokes a strain on the channel region.

30. The method of claim 21, wherein the faceted region has an etch-out angle of about 120 degrees to about 130 degrees.